# Experimental report

02/02/2026

**Proposal:** **EASY-1582** **Council:** 4/2025

**Title:** BMG measurements to characterize the structure

**Research area:** Materials

**This proposal is a new proposal**


**Main proposer:** **Paula RODRIGUEZ**

**Experimental team:**

**Local contacts:** Vivian NASSIF


**Samples:** Vit105 (Zr 52.5 Ti 5 Cu 17.9 Ni 14.6 Al 10) as-cast

| Instrument | Requested days | Allocated days | From | To |
|---|---|---|---|---|
| D1B | 1 | 1 | 02/10/2025 | 03/10/2025 |


**Abstract:**

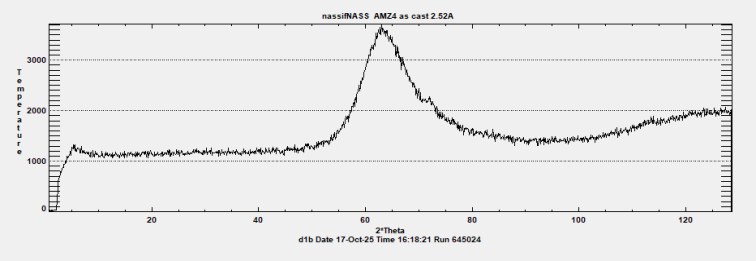
We would like to run a test on D1B to characterise the structure of metallic glasses. The aim is to determine the peak position of the first peak with high accuracy, which is essential for optimizing and guiding further strain/stress measurements on SALSA

**Instrument: D1B -EASY-1579 TO -EASY-1583**
**October 2025**

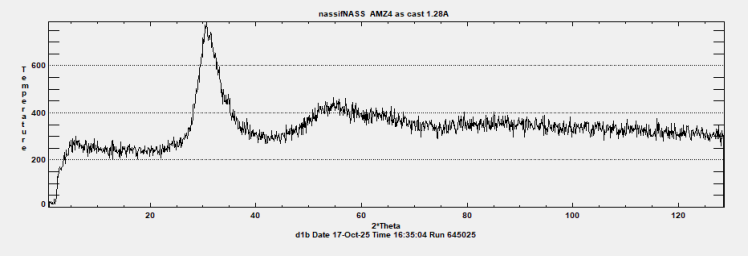
Five measurements were measurement: stress relieved and annealed samples (sample cut from a cast plate and treated at different heat treatments) and one measurement on cast sample. All of them with chemical composition of Zr59.3Cu28.8Al10.4Nb1.5. Then two samples (as-cast and 300K) with chemical composition Vit105. The samples are amorphous with dimensions of 2 mm x 4 mm x 25 mm. The mass is around 50 mg. The total time of measurements was 2 h. The container used is a cryostat (2K<T<300K) with a vanadium tail of diameter = 24 mm. The purpose of these measurements is to obtain the reference crystallographic structure to identify the peaks studied in SALSA. The experiment parameters are detailed below:

- Measurement time: 5min
- Wavelength (A): 1.28 and 2.52
- Number of points: 1280
- 2Theta_min (deg.): 0.77000
- 2Theta_max (deg.): 128.67000
- d_min (A): 0.85461 d_max (A): 114.63707
- Ymin: 0.00000 Ymax: 1015.00000
- Sommation of countings: 0.12E+06

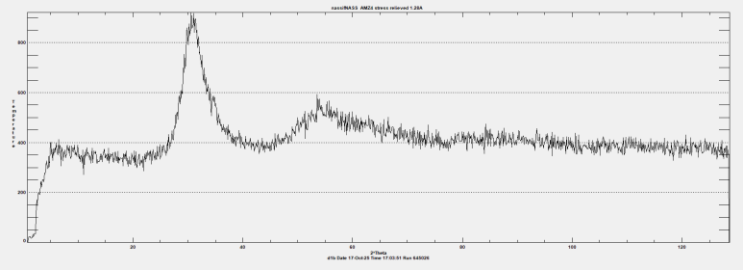
AMZ4 – as-cast 2.52 A (#645024) – **EASY-1579**



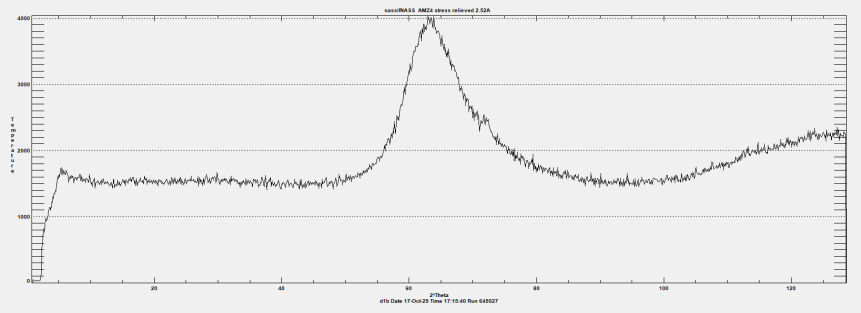

AMZ4 – as-cast 1.28 A (#645025)



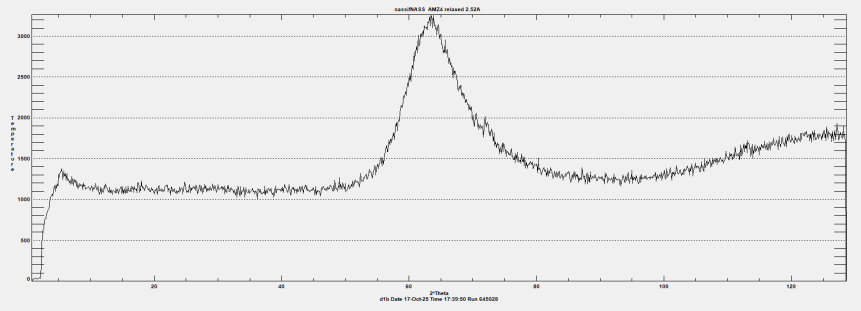

AMZ4 – stress relieved 1.28 A (#645026) **-EASY-1580**



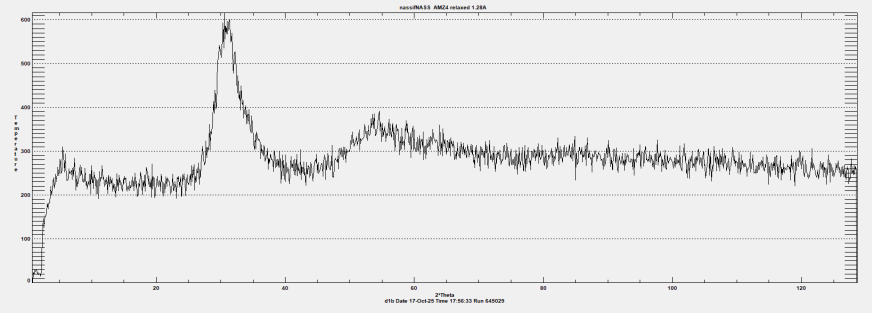
AMZ4 – stress relieved 2.52 A (#645027)



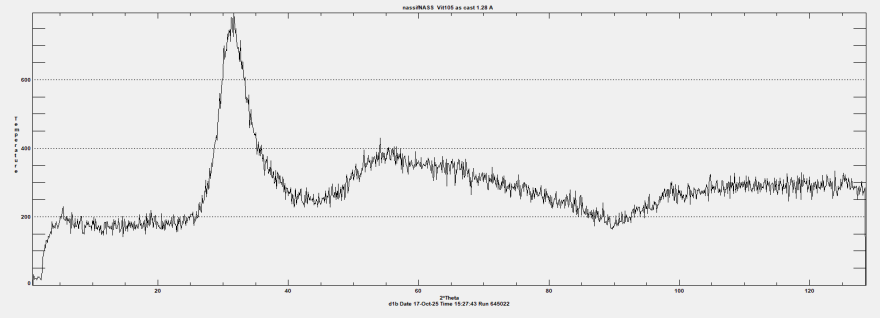
AMZ4 – relaxed 2.52A (#645028) --**EASY-1581**



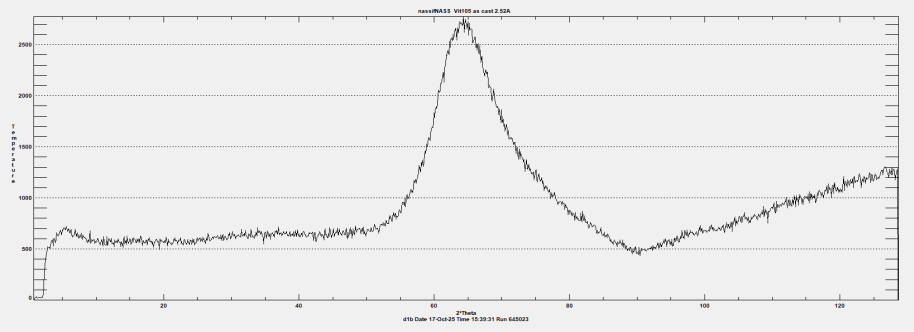
AMZ4 – relaxed 1.28A (#645029)



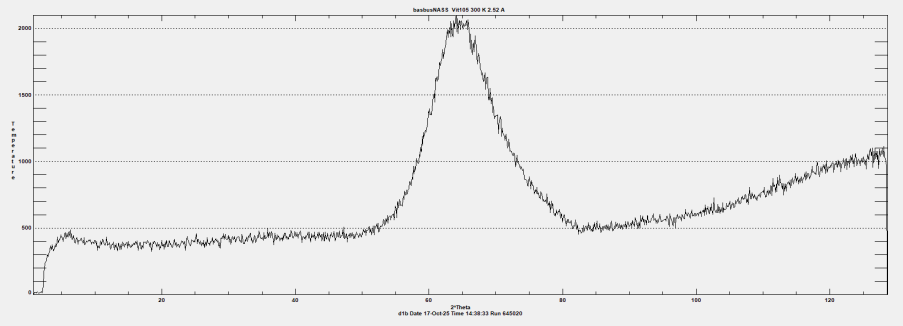
Vit105 – as-cast 1.28A (#645022) **-EASY-1582**



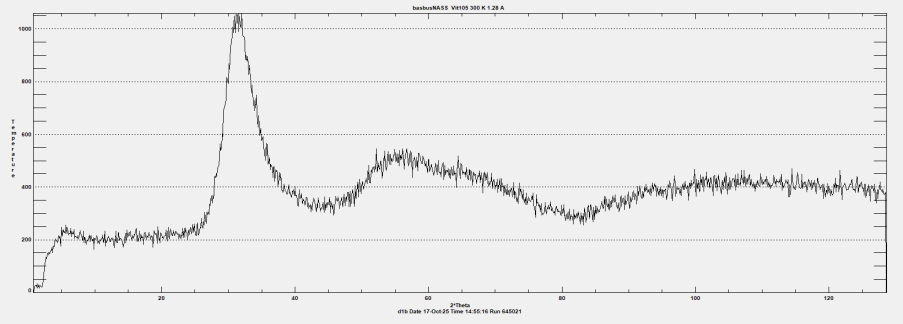
Vit105 – as-cast 2.52A (#645023)




Vit105 – 300K 2.52A (#645020) **-EASY-1583**




Vit105 – 300K 1.28A (#645021)




A complete diffractogram was obtained for the five samples to select the most suitable peak for SALSA measurements. Unexpectedly, the samples do not exhibit significant differences, despite their different chemical compositions.